US-PAT-NO: 5822169

DOCUMENT-IDENTIFIER: US 5822169 A

TITLE: Contact charging device

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Detailed Description Text - DETX (70):

A preferable material of the conductive tube 10 satisfies the following conditions: it does not contain such a material to contaminates the photosensitive drum, and after it is released from being compressed, little distortion is left in the material. Examples of the preferable material are resin containing carbon black, ~~or rubber containing~~ the same, such as nylon resin, polyester resin, polycarbonate resin, or polyimide resin, and urethane rubber. A specific example of the conductive tube 10 is a tubular member which is made of a material of 1000 kg/mm.sup.2 or smaller in Young's modulus, and is 300 .mu.m or smaller in thick and 7 mm or larger in the outside diameter. A resistance of the conductive tube 10 is preferably within the range of 10.sup.5 to 10.sup.9 .OMEGA.cm. If the resistance is so selected, minute defects of the photosensitive drum 30 do not impair the quality of the resultant image. The resistance of the conductive tube 10 is determined depending on the peripheral speed of the photosensitive drum 30. As the peripheral speed becomes large, the upper limit of the resistance value is lowered.

Detailed Description Text - DETX (77):

Specifications of each of the nylon tubes were: the diameter was 10 mm.phi., the thickness was 30 .mu.m, the Young's modulus was 110 kg/mm.sup.2, and the length was 230 mm. A first supporting member manufactured was 7 mm.phi. in diameter and 240 mm long and 0.2 mm in straightness made of stainless steel. The first supporting member was disposed 1 mm apart from the photosensitive drum. A second supporting member was manufactured by bonding a fluorine resin tape of 150 .mu.m thick on the surface of a sponge of 3 mm thick. The conductive nylon tube was inserted between the first and the second supporting members by a line pressure of 1 g/cm. A photosensitive drum was manufactured such that a function-separation, negative charging type organic photoconductive layer of 20 .mu.m thick was layered on the surface of an aluminum pipe of 60 mm.phi. diameter. The conductive nylon tube, nipped between the first and the second supporting members, was brought into contact with the photosensitive

drum rotating at 30 mm/sec (peripheral speed). A DC voltage at -1150 V was applied to the first supporting members, to thereby charge the photosensitive drum. A surface potential of the photosensitive drum such that the surface potential of the photosensitive drum charges at about -600 V was measured. The contact charging device thus constructed was incorporated into an image forming apparatus of 600 dpi. The image forming apparatus was operated to form a dot pattern on a plain paper of A4 size. The resultant dot pattern images were evaluated.

Current US Cross Reference Classification - CCXR (1):
399/174